

AMENDMENTS TO THE CLAIMS

Please amend the claims as follows:

This listing of claims will replace all prior versions, and listing, of claims in the application.

Listing of Claims:

Claim 1 (previously presented): An isolated, synthetic, or recombinant nucleic acid comprising:

- (a) a nucleic acid sequence having at least 95% sequence identity to SEQ ID NO:23, wherein the nucleic acid encodes a polypeptide having a laccase activity, or
- (b) a nucleic acid sequence completely complementary to (a).

Claim 2 (previously presented): An isolated, synthetic, or recombinant nucleic acid comprising a nucleic acid sequence having at least 97% sequence identity to SEQ ID NO:23, wherein the nucleic acid encodes a polypeptide having a laccase activity.

Claim 3 (Previously presented): An isolated, synthetic, or recombinant nucleic acid comprising a nucleic acid sequence having at least 99% sequence identity to SEQ ID No.:23, wherein the nucleic acid encodes a polypeptide having a laccase activity.

Claim 4 (Canceled)

Claim 5 (Previously presented): An isolated, synthetic, or recombinant nucleic acid comprising the sequence of SEQ ID NO:23.

Claim 6 (Currently amended): The isolated, synthetic, or recombinant nucleic acid as in any one of the preceding claims, wherein the nucleic acid comprises a sequence that encodes a polypeptide having laccase activity and having at least 95% sequence identity to ~~at least 550 contiguous amino acids of a polypeptide comprising~~ the amino acid sequence of SEQ ID NO:24.

Claims 7 - 9 (canceled)

Claim 10 (previously presented): The isolated, synthetic or recombinant nucleic acid of claim 1, wherein the encoded polypeptide having laccase activity comprises catalyzing the oxidation of 2,2'-azino-bis(3-ethylbenzthiazoline-6-sulfonic acid) (ABTS).

Claim 11 (previously presented): The isolated, synthetic or recombinant nucleic acid of claim 1, wherein the encoded polypeptide having laccase activity comprises a peroxidase activity.

Claim 12 (canceled)

Claim 13 (previously presented): The isolated, synthetic or recombinant nucleic acid of claim 1, wherein the encoded polypeptide having laccase activity comprises oxidation of valencene.

Claim 14-20 (canceled)

Claim 21 (previously presented): The isolated, synthetic or recombinant nucleic acid of claim 1, wherein the encoded polypeptide having laccase activity comprises oxidation of an aromatic amine.

Claim 22 (Currently amended): The isolated, synthetic or recombinant nucleic acid of claim 1, wherein the encoded polypeptide having laccase activity retains the laccase activity after exposure to a temperature range of 55° C to 75° C.

Claim 23 - 26 (canceled)

Claim 27 (previously presented): A nucleic acid probe for identifying a nucleic acid encoding a polypeptide with a laccase activity, wherein the probe comprises at least 60 to 150 consecutive bases of the nucleic acid of claim 1, wherein the probe identifies the nucleic acid by

hybridization under high stringency conditions, wherein the high stringency conditions include a wash step comprising a wash in 0.2X SSC at a temperature of about 65° C for about 15 minutes, and the identified nucleic acid sequence has at least 95% sequence identity to SEQ ID NO:23, and the identified nucleic acid encodes a polypeptide having laccase activity.

Claims 28 to 39 (canceled)

Claim 40 (previously presented): An expression cassette comprising the nucleic acid of claim 1.

Claim 41 (previously presented): A vector comprising the nucleic acid of claim 1.

Claim 42 (previously presented): A cloning vehicle comprising the nucleic acid of claim 1.

Claims 43 to 44 (canceled)

Claim 45 (previously presented): An isolated transformed cell comprising the nucleic acid of claim 1.

Claim 46 (canceled)

Claim 47 (previously presented): The isolated transformed cell of claim 45, wherein the cell is a yeast cell.

Claims 48-105 (canceled)

Claim 106 (currently amended): A method for producing a recombinant polypeptide having laccase activity, comprising:

- (a) transforming an isolated host cell with a nucleic acid operably linked to a promoter, wherein the nucleic acid comprises the sequence of claim 1; and

(b) expressing the nucleic acid of (a) under conditions that allow expression of the polypeptide, thereby producing the recombinant polypeptide.

Claims 107-127 (canceled)

Claim 128 (currently amended): A method for isolating or recovering a nucleic acid encoding a polypeptide with laccase activity from an environmental sample comprising:

- (a) providing the probe of claim 27;
- (b) isolating a nucleic acid from the environmental sample or treating the environmental sample so that the nucleic acid is accessible for hybridization to the probe;
- (c) combining the isolated nucleic acid or the treated environmental sample of (b) with the probe; and
- (d) isolating a nucleic acid that specifically hybridizes under high stringency conditions, with the probe,
wherein the high stringency conditions include a wash step comprising a wash in 0.2X SSC at a temperature of about 65° C for about 15 minutes;
thereby isolating or recovering a nucleic acid having at least 95% identity to SEQ ID NO:23 encoding a polypeptide with laccase activity from an environmental sample.

Claims 129-150 (canceled)

Claim 151 (previously presented): A method for oxidizing an aromatic amine, comprising:

- (a) providing a polypeptide encoded by the nucleic acid of claim 1;
- (b) providing an aromatic amine; and
- (c) reacting the polypeptide of (a) with the aromatic amine of (b) under conditions that facilitate oxidizing the aromatic amine by the laccase enzymatic reaction.

Claims 152-258 (canceled)

Claim 259 (previously presented): The method of claim 106, wherein the host cell is a yeast cell.

Claim 260 (currently amended): The method of claim 259, wherein the host is selected from the group consisting of: a *Schizosaccharomyces* sp., a *Saccharomyces* sp., and [[or]] a *Pichia* sp.

Claim 261 (previously presented): The method of claim 260, wherein the host is *Schizosaccharomyces pombe*.

Claim 262 (Previously presented): The method of claim 260, wherein the host is *Saccharomyces cerevisiae*.

Claim 263 (Previously presented): The method of claim 260, wherein the host is *Pichia pastoris*.

Claim 264 (Previously presented): The method of claim 106, wherein the host cell is *E. coli*.

Claim 265 (Previously presented): The method of claim 106, wherein the host cell is *Bacillus cereus*.

Claim 266 (currently amended): The nucleic acid of claim 1, wherein the nucleic acid sequence encodes a polypeptide comprising the amino acid sequence of ~~sequence comprising~~ SEQ ID NO:24.

Claim 267-269 (canceled)

Claim 270 (previously presented): The method of claim 151, wherein the aromatic amine is 2,2'-azino-bis(3-ethylbenzthiazoline-6-sulfonic acid) (ABTS).

Claim 271 (previously presented): A method for oxidizing valencene, comprising the following steps:

(a) providing a polypeptide encoded by the nucleic acid of claim 1;

- (b) providing valencene; and
- (c) reacting the polypeptide of step (a) with the valencene under conditions that facilitate the laccase activity of the polypeptide; thereby oxidizing the valencene.

Claim 272 (canceled)